EXHIBIT 80

REDACTED

Bernanke experiment analysis
(THIS IS THE INTERNAL TO GTRADE DOC NOT TO BE SHARED!)

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Note: The results in this doc are not up to date

Summary

- Project Bernanke involves reducing the second price and increasing the first price of the two bids submitted by GDN to the AdX auction in such a way that publishers receive fair payout (e.g. GDN margin remains constant) and GDN profit is maximized.
- The optimal and fair combination of first bid increase and second bid decrease for each publisher is estimated using AdX auction simulations, using an auction simulation code written by GTrade (more details below).
- We are currently running random query experiments.
- [redacted]

Bernanke methodology

[redacted] The primary reason for the low match rate are the reserve prices set by the publisher, which need to be beat for an ad to win the auction. GDN has historically submitted two bids to the AdX auction. [redacted] As part of project Project Bernanke, we reduce the second bid (and in some cases drop the second bid completely) and create a pool of money, which we then reinvest by increasing the first bid on queries in order to win potentially unmatched queries. This is done in such a way that GDN profit is maximized while also ensuring fair GDN payout to the exchange/ publisher. Here, fairness is defined as ensuring the desired margin on the GDN payout. For instance, for non-video requests, this implies retaining only $0.14 on average for every $1 revenue. (It is to be noted that this margin of 14% is to be achieved in aggregate over some number of queries/ period of time. This is similar to what is done today where we pay in CPM but earn in CPC and can not ensure that we pay 14% on every query, but expect to achieve that in expectation.)

As mentioned above, project Bernanke involves reducing the second price and increasing the first price of the two bids submitted by GDN to the AdX auction in such a way that publishers receive fair payout and GDN profit is maximized. The optimal combination of first bid increase and second bid decrease for each publisher is estimated using AdX auction simulations. In order to gather data for running the auction simulations, a 1% background experiment is run where every top GDN bid is quadrupled and the second bid dropped. In this experiment, on queries GDN wins, it can be inferred that the second price is the price that GDN needs to beat in order to win the auction. Now, we can determine, if instead of quadrupling the bid, we could have, for instance, tripled the bid and still won this auction. We pick various bid multipliers between 1 and 4 and evaluate whether GDN will win that query at each of these bid multipliers. On queries won by GDN at any bid multiplier, the payouts to the exchange and the publisher are then computed for various second bid reductions from 0 to 1. Using this mechanism, we estimate the queries GDN will win, the associated revenue, payout, etc., on all queries of this background experiment for various combinations of first bid increase and second bid decrease. It is important to note that in this entire process, we only use information about the GDN bid and the GDN price paid on queries won by GDN. In other words, we do not use any AdX buyer information.

For each bid multiplier combination, we compute how much the payout to the exchange deviates from what is construed as fair and add it to a pool. For a particular bid multiplier combination, the total deviation is the sum of the deviations from fairness on each individual query. For instance, on a given non-video query, if the expected revenue equals $1, we should pay $0.86 to the exchange, so any deviation from this is added to the pool. On queries where we underpay (say, $0.5), the pool is increased by the extent of the underpayment (i.e., pool is increased by $0.36). On queries where we overpay (say, $1), the pool is decreased by the extent of the overpayment (i.e, pool is decreased by $0.14). For each web property, there exist several combinations of first bid increase and second bid decrease where the final aggregated pool over the course of a day (or some period of time) equals 0, but each of them correspond to different values of GDN profit. The optimal multipliers are those that ensure that the pool equals 0 and maximizes GDN profit.

The above estimated optimal multipliers are then used in experiments. In addition, in order to ensure that the pool doesn't deviate significantly from 0, an online control mechanism is used where the pool is tracked per supermixer task for each web property. On any query, if this number is larger a pre-determined positive threshold, we do not reduce the second bid on that query. Similarly, on any query, if the deviation is smaller than a pre-determined negative threshold, we do not increase the first bid on that query. This ensures fair payout to each publisher within a reasonable tolerance.

The Bernanke experiments tend to lower the RPM for at least a few publishers. In order to ensure that the RPM reduction is within tolerance, while selecting the optimal bid multipliers, we only consider multipliers that will not cause the GDN RPM to drop worse than a pre-determined extent (e.g., -5%), as indicated by the auction simulations.

This document summarizes the results of the Bernanke experiments, and provides a discussion of the results and other relevant issues.

Analysis Summary

RASTA stats
REMH

1% experiment, 2013-08-24 to 2013-08-25

Notations:

- WP specific: Bid multipliers are determined for each web property in order to ensure that the payout for this publisher is fair and GDN profit is maximized on queries from this publisher.
- pool constrained: An online control scheme is used as a safeguard against the margin deviating significantly from the desired values.
- RPM controlled: While selecting optimal bid multipliers using the auction simulation, only bid multipliers that correspond to an RPM change > -10% are considered.
- The following table shows aggregate metrics over all queries (total), queries won by GDN (AdW) and queries won by AdX buyers (AdX).
- Google profit is defined as the difference between total Google revenue and the payout to publisher, on all queries.
- GDN profit is defined as the difference between total Google revenue and the payout to the exchange, on all queries. On queries won by AdX buyers, this value will be zero. More information is available in this document.
- GDN margin: 1 - (GDP payout to exchange / Revenue), computed on queries won by GDN.

Revenue, payout and profit in the WP specific, pool unconstrained experiment:

Revenue, payout and profit in the WP specific, pool unconstrained, GDN RPM controlled experiment:

[redacted]

GDN margin analysis

GDN margin is defined as 1 - (GDN payout to the exchange) / (revenue) on queries won by GDN. [redacted] . The achieved GDN margin even in the control is unlikely to be [redacted]. This is because of the variability in the actual click through rate (CTR) about pCTR and the potential inaccuracy in pCTR itself for various publishers.

Experiment	Aggregate actual margin (%)	Standard deviation of margin (%)*	Std dev. of actual margin (%)	Std. dev. of expected margin (%)
Control	[redacted]			
Unconstrained experiment				
Unconstrained, GDN RPM controlled experiment				

* expected to reduce once more days of data are used

Example of pub margin scatter (need more days of data)

[redacted]

[redacted]

[redacted]

eCDF of margin for pubs with > 10 USD spend in 2 days

[redacted]

Publisher RPM analysis

The Bernanke experiments reduce RPM aggregated over all the publishers. There is wide variability in the RPM change across publishers.

Experiment	Total RPM	RPM on queries won by GDN	RPM on queries won by AdX buyers
Control	[redacted]		
Unconstrained experiment			
Unconstrained, GDN RPM controlled experiment			

INSERT EXAMPLE HISTOGRAM OF RPM CHANGE HERE

Experiment	# Publishers with RPM change < -10%, corresponding revenue	# Publishers with RPM change < -20%, corresponding revenue
Unconstrained experiment	[redacted]	
Unconstrained, GDN RPM controlled experiment		

[redacted]

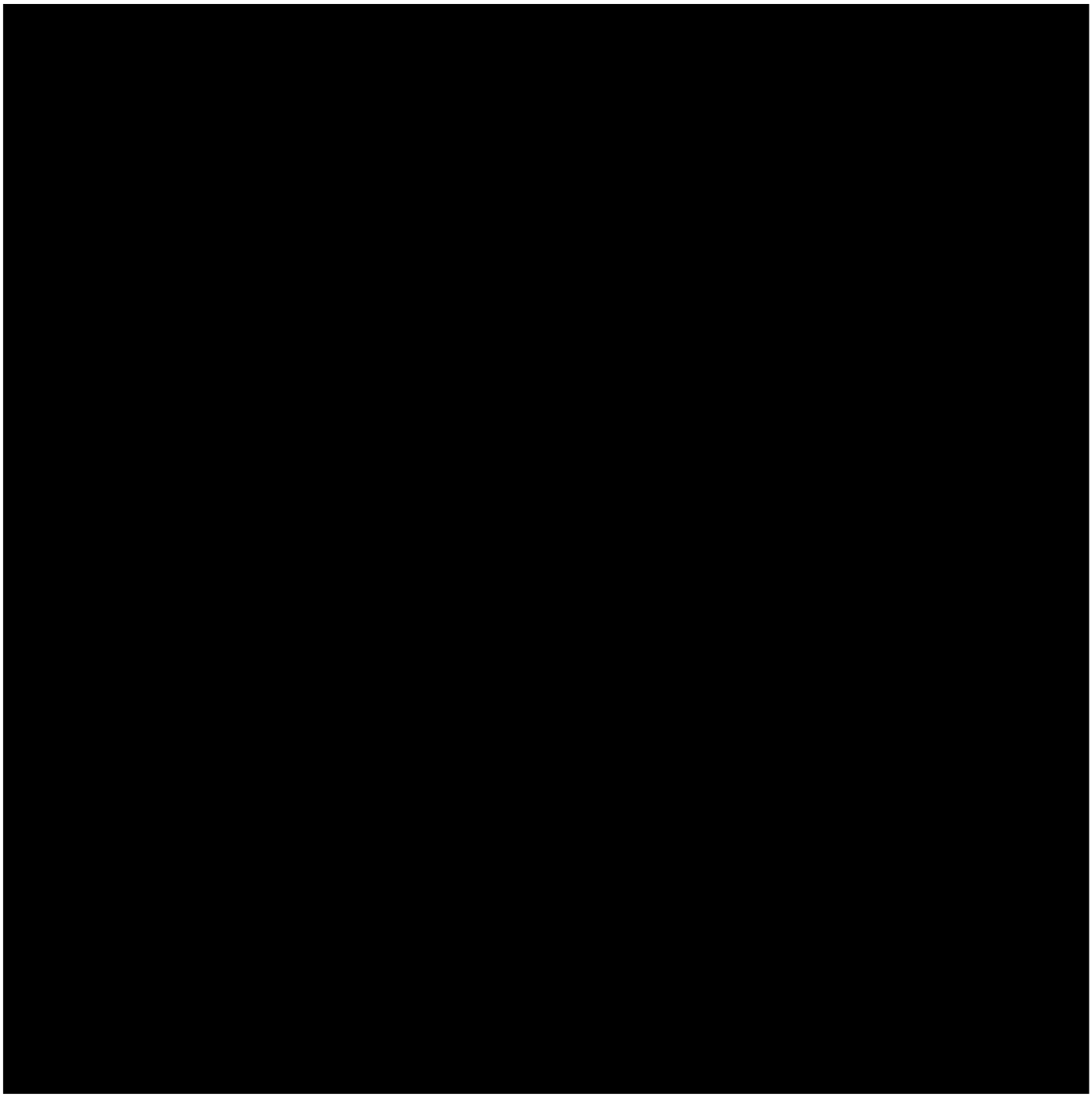
Publisher revenue analysis

Experiment	# Publishers with payout drop, corresponding revenue
Unconstrained experiment	[redacted]
Unconstrained, GDN RPM controlled experiment	

Advertiser CPD analysis

- [redacted]

Raw statistics



Impact on Invite Media

Invite Media	Queries (Million)	Spend (USD)
Control	[redacted]	
Experiment		

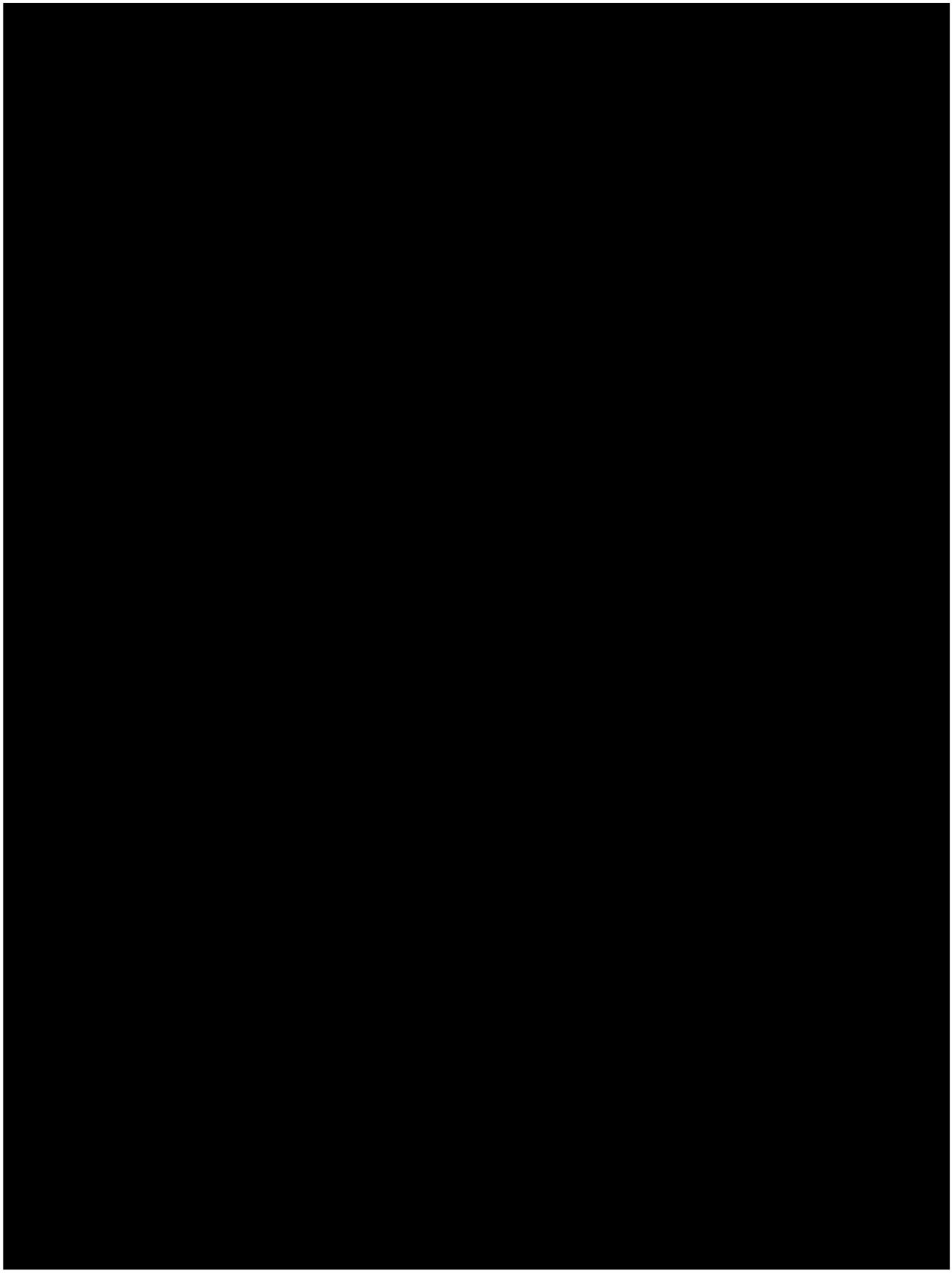
Impact on GDNR

Invite Media	Queries (Million)	Spend (USD)
Control	[redacted]	
Experiment		

[redacted]

Appendix

Tabulated results:



Comments in earlier doc

- Margin: expected and actual
- Figure for projections
- % of revenue, similarly for payout
- grid lines in plot